

WHAT IS CLAIMED IS

Sub A17
1. A method for bridging a first computing environment based upon a message passing model to a second computing environment, comprising:

a first entity in the first computing environment accessing a proxy service through messages in a data representation language;

10 the proxy service providing to the first entity an interface to a second entity in the second computing environment; and

the first entity accessing the second entity in the second computing environment through the interface provided by the proxy service.

15 2. The method as recited in claim 1, wherein the interface provides a data representation language messaging channel between the proxy service and the first entity in the first computing environment, and wherein the interface further provides a communications channel between the proxy service and the second entity in the second computing environment.

20 3. The method as recited in claim 1, wherein the first entity is a client in the first computing environment, wherein the second entity is a service accessible through the second computing environment, and wherein the interface provided by the proxy service enables the first entity to access resources provided by the second entity to clients in the second environment.

25 4. The method as recited in claim 3, wherein the proxy service providing to the first entity the interface to the second entity in the second computing environment comprises locating the second entity among a plurality of services accessible through the second computing environment.

5. The method as recited in claim 4, wherein said locating the second entity among
the plurality of services accessible through the second computing environment comprises
determining that the second entity includes information identifying the entity as a service
5 accessible by entities in the first environment through proxy service interfaces to the
second computing environment.

6. The method as recited in 3, wherein the proxy service providing to the first entity
an interface to a second entity in the second computing environment comprises providing
10 an advertisement for the second entity, wherein the advertisement for the second entity
includes access information for accessing the second entity in the second environment
from the first environment.

7. The method as recited in claim 6, further comprising:

15 publishing the advertisement for the second entity on a space in the first
computing environment; and

20 wherein the first entity accessing a second entity in the second computing
environment through an interface comprises:

the first entity accessing the advertisement for the second entity from one
or more advertisements published on the space; and

25 the first entity accessing the second entity in accordance with the access
information in the advertisement for the second entity.

30 8. The method as recited in claim 6, wherein the advertisement includes information
describing one or more computer programming language method calls to methods in the
computer programming language provided by the second entity, the method further

comprising constructing on the first entity a client method gate configured to provide an interface to the second entity by generating data representation language messages including information representing the method calls.

- 5 9. The method as recited in claim 8, wherein the first entity accessing the second entity comprises:

the first entity generating a method call in the computer programming language;

- 10 the client method gate generating a data representation language message including information representing the method call;

the client method gate sending the data representation language message to a proxy method gate comprised on the proxy service;

- 15 the proxy method gate generating one or more objects in the computer programming language from the information representing the method call;
and

- 20 the proxy service invoking a method on the second entity, wherein the one or more objects are passed to the method in said invoking.

10. The method as recited in claim 9, further comprising:

- 25 the second entity executing the invoked method, wherein said executing generates results data;

the second entity sending the results data to the proxy service.

- 30 11. The method as recited in claim 10, further comprising:

5

the proxy service generating a results advertisement for the results data;
the proxy service sending the results advertisement to the client method gate; and
the first entity generating a results method gate from the results advertisement sent
to the client method gate.

10 12. The method as recited in claim 8, wherein the computer programming language is
Java.

15 13. The method as recited in claim 1, further comprising:

20 the first entity sending a first message in the data representation language to the
proxy service, wherein the first message includes information for the
second entity;

25 converting the first message in the data representation language to a first
transmission compatible with the second computing environment and
receivable by the second entity in the second computing environment; and

sending the first transmission to the second entity in the second computing
environment.

30 25 14. The method as recited in claim 1, further comprising:

the second entity sending a first transmission compatible with the second
computing environment to the proxy service, wherein the first
transmission includes information for the first entity;

30

converting the first transmission to a first message in the data representation language, wherein the first message includes the information from the first transmission; and

5 sending the first message to the first entity in the first computing environment.

15. The method as recited in claim 14, wherein the first entity is a client in the first computing environment, wherein the second entity is a service accessible through the second computing environment, and wherein the information in the first transmission is
10 results data generated by the second entity in response to a request sent to the second entity by the first entity through the proxy service.

16. The method as recited in claim 1, further comprising:

15 the second entity sending a first transmission compatible with the second computing environment to the proxy service, wherein the first transmission includes data for the first entity;

20 storing the data received in the first transmission; and

25 providing an advertisement for the stored data to the first entity, wherein the advertisement for the stored data includes access information for the stored data.

17. The method as recited in claim 16, further comprising:

the first entity accessing the advertisement for the stored data; and

30 the first entity accessing the stored data in accordance with the access information for the stored data in the advertisement for the stored data.

18. The method as recited in claim 16, wherein the first entity is a client in the first computing environment, wherein the second entity is a service accessible through the second computing environment, and wherein the data in the first transmission is results 5 data generated by the second entity in response to a request sent to the second entity by the first entity through the proxy service.
19. The method as recited in claim 1, wherein the second environment is a message-based environment using a different language for messages than the data representation 10 language used for messages in the first environment.
20. The method as recited in claim 1, wherein the second environment is a non-message based environment.
- 15 21. The method as recited in claim 1, wherein communication among entities in the second environment uses remote method invocation (RMI).
22. The method as recited in claim 21, wherein the second environment is a Jini environment.
- 20
23. The method as recited in claim 1, wherein the second environment is an enterprise computing environment, wherein the second entity is an enterprise service accessible through the enterprise computing environment.
- 25 24. The method as recited in claim 1, wherein the data representation language is eXtensible Markup Language (XML).
25. A method for bridging a first computing environment based upon a message 30 passing model to a second computing environment, comprising:
H

a first entity in the second computing environment accessing a proxy service;
the proxy service providing to the first entity an interface to a second entity in the
5 first computing environment; and
the first entity accessing the second entity in the first computing environment
through the interface provided by the proxy service, wherein the proxy
service accesses the second entity through messages in the data
10 representation language.

26. The method as recited in claim 25, wherein the interface provides a data
representation language messaging channel between the proxy service and the second
entity in the first computing environment, and wherein the interface further provides a
15 communications channel between the proxy service and the first entity in the second
computing environment.

27. The method as recited in claim 25, wherein the first entity is a client in the second
computing environment, wherein the second entity is a service accessible through the first
20 computing environment, and wherein the interface provided by the proxy service enables
the first entity to access resources provided by the second entity to clients in the first
computing environment.

28. The method as recited in claim 27, wherein the proxy service providing to the first
entity the interface to the second entity in the first computing environment comprises
25 locating the second entity among a plurality of services accessible through the first
computing environment.

29. The method as recited in claim 25, further comprising:

30

the first entity sending a transmission compatible with the second computing environment to the interface, wherein the first message includes information for the second entity;

5 converting the first transmission to a first message in the data representation language of the first environment; and

sending the first message to the second entity in the first computing environment.

10 30. The method as recited in claim 25, further comprising:

the second entity sending a first message in the data representation language to the interface, wherein the first message includes information for the first entity;

15 converting the first message to a first transmission compatible with the second computing environment, wherein the first message includes the information from the first message; and

20 sending the first transmission to the first entity in the second computing environment.

31. The method as recited in claim 30, wherein the first entity is a client in the second computing environment, wherein the second entity is a service accessible through the first computing environment, and wherein the information in the first transmission is results data generated by the second entity in response to a request sent to the second entity by the first entity through the interface.

32. The method as recited in claim 25, wherein the second environment is a message-based environment using a different language for messages than the data representation language used for messages in the first environment.

5 33. The method as recited in claim 25, wherein the second environment is a non-message based environment.

34. The method as recited in claim 25, wherein communication among entities in the second environment uses remote method invocation (RMI).

10

35. The method as recited in claim 34, wherein the second environment is a Jini environment.

15

36. The method as recited in claim 25, wherein the second environment is an enterprise computing environment, wherein the second entity is an enterprise client in the enterprise computing environment.

37. The method as recited in claim 25, wherein the data representation language is eXtensible Markup Language (XML).

20

38. A method for bridging a first computing environment based upon a message passing model to a second computing environment, comprising:

25

locating one or more services among a plurality of services accessible through a second computing environment;

generating one or more advertisements in the data representation language for the one or more services in the second computing environment, wherein an

advertisement for a service includes access information for accessing the service in the second environment from the first environment; and

5 publishing the one or more advertisements in a space in the first computing environment.

39. The method as recited in claim 38, wherein said locating one or more services among a plurality of services in the second computing environment comprises determining that each of the one or more services includes information identifying the
10 service as accessible by clients in the first environment through proxy service interfaces to the second computing environment.

40. The method as recited in claim 38, wherein a service in the second computing environment that does not include information identifying the service as accessible by
15 entities in the first environment through proxy service interfaces to the second computing environment is not included in the one or more located services.

41. The method as recited in claim 38, further comprising:
20 a first client in the first computing environment accessing, from the one or more advertisements published on the space, a first advertisement associated with a first service of the one or more services accessible through the second computing environment; and

25 the first client accessing the first service in accordance with the access information in the first advertisement.

42. The method as recited in claim 41, wherein the first client accessing the first service in accordance with the access information in the first advertisement comprises:
30

invoking a proxy service for the first service; and

the proxy service providing to the first client an interface to the first service in the second computing environment, wherein the first client accesses the first service through the interface provided by the proxy service.

5

43. The method as recited in claim 42, wherein the interface includes a data representation language messaging channel between the proxy service and the first client, and wherein the interface further includes a communications channel between the proxy 10 service and the first service.

15

44. The method as recited in claim 41, further comprising:

the first client sending a first message in the data representation language to the proxy service, wherein the first message includes information for the first service;

20

converting the first message in the data representation language to a first transmission compatible with the second computing environment and receivable by the first service in the second computing environment; and

sending the first transmission to the first service in the second computing environment.

25

45. The method as recited in claim 41, further comprising:

the first service sending a first transmission compatible with the second computing environment to the proxy service, wherein the first transmission includes information for the first client;

30

converting the first transmission to a first message in the data representation language, wherein the first message includes the information from the first transmission; and

5 sending the first message to the first client in the first computing environment.

46. The method as recited in claim 45, wherein the information in the first transmission is results data generated by the first service in response to a request sent to the first service by the first client through the proxy service.

10

47. The method as recited in claim 41, further comprising:

15

the first service sending a first transmission compatible with the second computing environment to the proxy service, wherein the first transmission includes data for the first client;

storing the data received in the first transmission; and

20

providing to the first client a second advertisement for the stored data to the first client, wherein the second advertisement includes access information for the stored data.

48. The method as recited in claim 38, wherein communication among entities in the second environment uses remote method invocation (RMI).

25

49. The method as recited in claim 48, wherein the second environment is a Jini environment.

30

50. The method as recited in claim 38, wherein the data representation language is eXtensible Markup Language (XML).

51. A distributed computing system, comprising:

5 a first device in a first computing environment based upon a message passing model;

a second device in a second computing environment not based upon the message passing model of the first environment; and

10 a proxy service configured to provide an interface to the second device in the second computing environment to entities in the first environment;

15 wherein the first device is configured to:

access the proxy service through messages in the data representation language; and

20 access the second device in the second computing environment through the interface provided by the proxy service.

52. The system as recited in claim 51, wherein, in said providing an interface, the proxy service is further configured to:

25 provide a data representation language messaging channel between the proxy service and the first device in the first computing environment; and

provide a communications channel between the proxy service and the second device in the second computing environment.

30

53. The system as recited in claim 51, wherein the first device is a client in the first computing environment, wherein the second device is a service accessible through the second computing environment, and wherein the proxy service is further configured to enable the first device to access resources provided by the second device to clients in the second environment.

5

54. The system as recited in claim 53, further comprising:

a plurality of services accessible through the second computing environment;

10

wherein, in said providing an interface, the proxy service is further configured to locate the second device among the plurality of services accessible through the second computing environment.

15

55. The system as recited in claim 54, wherein, in said locating the second device among the plurality of services accessible through the second computing environment, the proxy service is further configured to determine that the second device comprises information identifying the device as a service accessible by entities in the first environment through proxy service interfaces to the second computing environment.

20

56. The system as recited in claim 53, wherein, in said providing an interface, the proxy service is further configured to:

25

provide an advertisement for the second device in the second computing environment, wherein the advertisement for the second device includes access information for accessing the second device in the second computing environment from the first environment; and

30

wherein, in said accessing the second device in the second computing environment through the interface, the first device is further configured to:

access the advertisement for the second device; and

access the second device in accordance with the access information in the
5 advertisement for the second device.

57. The system as recited in claim 56, wherein the advertisement includes information
describing one or more computer programming language method calls to methods in the
computer programming language provided by the second device, wherein the first device
10 is further configured to construct a client method gate configured to provide an interface
to the second device by generating data representation language messages including
information representing the method calls.

58. The system as recited in claim 57,

15 wherein, in said accessing the second device, the first device is further configured
to generate a method call in the computer programming language;

20 wherein the client method gate is configured to:

generate a data representation language message including information
representing the method call; and

send the data representation language message to a proxy method gate comprised
25 on the proxy service;

wherein the proxy method gate is configured to generate one or more objects in
the computer programming language from the information representing
the method call; and

30

wherein the proxy service is further configured to invoke a method on the second device, wherein the one or more objects are passed to the method in said invoking.

- 5 59. The system as recited in claim 58, wherein the second device is further configured to:

execute the invoked method, wherein said executing generates results data; and

- 10 send the results data to the proxy service.

60. The system as recited in claim 59,

wherein the proxy service is further configured to:

15 generate a results advertisement for the results data; and

send the results advertisement to the client method gate; and

- 20 wherein the first device is further configured to generate a results method gate from the results advertisement sent to the client method gate.

- 25 61. The system as recited in claim 57, wherein the computer programming language is Java.

62. The system as recited in claim 51,

wherein the first device is further configured to send a first message in the data representation language to the proxy service, wherein the first message includes information for the second device; and

wherein the proxy service is further configured to:

convert the first message in the data representation language to a first
5 transmission compatible with the second computing environment
and receivable by the second device in the second computing
environment; and

send the first transmission to the second device in the second computing
10 environment.

63. The system as recited in claim 51,

15 wherein the second device is configured to send a first transmission compatible
with the second computing environment to the proxy service, wherein the
first transmission includes information for the first device;

wherein the proxy service is further configured to:

20 convert the first transmission to a first message in the data representation
language, wherein the first message includes the information from
the first transmission; and

25 send the first message to the first device in the first computing
environment.

64. The system as recited in claim 63, wherein the first device is a client in the first
computing environment, wherein the second device is a service accessible through the
second computing environment, and wherein the information in the first transmission is

results data generated by the second device in response to a request sent to the second device by the first device through the proxy service.

65. The system as recited in claim 51,

5

wherein the second device is configured to send a first transmission compatible with the second computing environment to the proxy service, wherein the first transmission includes data for the first device;

10 wherein the proxy service is further configured to:

store the data received in the first transmission; and

15 provide an advertisement for the stored data to the first device, wherein the advertisement for the stored data includes access information for the stored data.

66. The system as recited in claim 65, wherein the first device is further configured to:

20 access the advertisement for the stored data; and

access the stored data in accordance with the access information for the stored data in the advertisement for the stored data.

25 67. The system as recited in claim 65, wherein the first device is a client in the first computing environment, wherein the second device is a service accessible through the second computing environment, and wherein the data in the first transmission is results data generated by the second device in response to a request sent to the second device by the first device through the proxy service.

30

68. The system as recited in claim 51, wherein the second environment is a message-based environment using a different language for messages than the data representation language used for messages in the first environment.

5 69. The system as recited in claim 51, wherein the second environment is a non-message based environment.

70. The system as recited in claim 51, wherein communication among entities in the second environment uses remote method invocation (RMI).

10 71. The system as recited in claim 70, wherein the second environment is a Jini environment.

15 72. The system as recited in claim 51, wherein the second environment is an enterprise computing environment, wherein the second device is an enterprise service accessible through the enterprise computing environment.

73. The system as recited in claim 51, wherein the data representation language is eXtensible Markup Language (XML).

20 74. A distributed computing system, comprising:

a first device in a first computing environment based upon a message passing model;

25 a second device in a second computing environment not based upon the message passing model of the first environment; and

a proxy service configured to provide an interface to the first device in the first computing environment to the second device in the second environment, wherein the interface includes:

5 a data representation language messaging channel between the proxy service and the first device in the first computing environment; and

a communications channel between the proxy service and the second device in the second computing environment;

10

75. The system as recited in claim 74, wherein the second device is configured to:

access the proxy service through transmissions on the communications channel;
and

15

access the first device in the first computing environment through the interface provided by the proxy service.

76. The system as recited in claim 74, wherein the second device is a client in the
20 second computing environment, wherein the first device is a service accessible through the first computing environment, and wherein the proxy service is further configured to enable the second device to access resources provided by the first device to clients in the first computing environment.

25 77. The system as recited in claim 76, further comprising:

a plurality of services accessible through the first computing environment;

wherein, in said providing an interface, the proxy service is further configured to locate the first device among the plurality of services accessible through the first computing environment.

5 78. The system as recited in claim 74,

wherein the second device is configured to send a transmission compatible with the second computing environment to the interface, wherein the first message includes information for the first device; and

10

wherein the proxy service is further configured to:

convert the first transmission to a first message in the data representation language of the first environment; and

15

send the first message to the first device in the first computing environment.

79. The system as recited in claim 74,

20

wherein the first device is configured to send a first message in the data representation language to the interface, wherein the first message includes information for the second device;

25

wherein the proxy service is further configured to:

convert the first message to a first transmission compatible with the second computing environment, wherein the first message includes the information from the first message; and

30

send the first transmission to the second device in the second computing environment.

80. The system as recited in claim 79, wherein the second device is a client in the
5 second computing environment, wherein the first device is a service accessible through
the first computing environment, and wherein the information in the first transmission is
results data generated by the first device in response to a request sent to the first device by
the second device through the interface.
- 10 81. The system as recited in claim 74, wherein the second environment is a message-
based environment using a different language for messages than the data representation
language used for messages in the first environment.
- 15 82. The system as recited in claim 74, wherein the second environment is a non-
message based environment.
83. The system as recited in claim 74, wherein communication among entities in the
second environment uses remote method invocation (RMI).
- 20 84. The system as recited in claim 83, wherein the second environment is a Jini
environment.
- 25 85. The system as recited in claim 74, wherein the second environment is an
enterprise computing environment, wherein the first device is an enterprise client in the
enterprise computing environment.
86. The system as recited in claim 74, wherein the data representation language is
eXtensible Markup Language (XML).

87. A distributed computing system, comprising:

an agent process in a first computing environment based upon a message passing model;

5

a space device in the first computing environment configured to store advertisements for services; and

10

a plurality of services accessible through a second computing environment;

wherein the agent process is configured to:

locate one or more services among the plurality of services accessible through the second computing environment;

15

generate one or more advertisements in the data representation language for the one or more services in the second computing environment, wherein an advertisement for a service includes access information for accessing the service in the second environment from the first computing environment; and

20

publish the one or more advertisements in the space device in the first computing environment.

25 88. The system as recited in claim 87, wherein, in said locating one or more services among a plurality of services in the second computing environment, the agent process is further configured to determine that each of the one or more services includes information identifying the service as accessible by clients in the first environment through proxy service interfaces to the second computing environment.

30

89. The system as recited in claim 87, wherein in said locating one or more services among a plurality of services in the second computing environment, the agent process is further configured to exclude from the one or more located services a service in the second computing environment that does not include information identifying the service as accessible by entities in the first environment through proxy service interfaces to the second computing environment.

5 90. The system as recited in claim 87, further comprising:

10 a first client in the first computing environment, configured to:

access, from the one or more advertisements published on the space device, a first advertisement associated with a first service of the one or more services accessible through the second computing environment; and

15 91. The system as recited in claim 90, further comprising:

access the first service in accordance with the access information in the first advertisement.

20 a proxy service for the first service;

wherein, in said accessing the first service in accordance with the access information in the first advertisement, the first client is further configured 25 to invoke the proxy service for the first service; and

wherein the proxy service is configured to provide to the first client an interface to the first service in the second computing environment, wherein the first

client accesses the first service through the interface provided by the proxy service.

92. The system as recited in claim 91, wherein the proxy service is further configured
5 to:

provide a data representation language messaging channel between the proxy service and the first client; and

10 provide a communications channel between the proxy service and the first service.

93. The system as recited in claim 90,

wherein the first client is further configured to send a first message in the data representation language to the proxy service, wherein the first message includes information for the first service;

wherein the proxy service is further configured to:

20 convert the first message in the data representation language to a first transmission compatible with the second computing environment and receivable by the first service in the second computing environment; and

25 send the first transmission to the first service in the second computing environment.

94. The system as recited in claim 90,

wherein the first service is configured to send a first transmission compatible with the second computing environment to the proxy service, wherein the first transmission includes information for the first client;

5 wherein the proxy service is further configured to:

convert the first transmission to a first message in the data representation language, wherein the first message includes the information from the first transmission; and

10 send the first message to the first client in the first computing environment.

95. The system as recited in claim 94, wherein the information in the first transmission is results data generated by the first service in response to a request sent to the first service by the first client through the proxy service.

96. The system as recited in claim 90, further comprising:

20 wherein the first service is configured to send a first transmission compatible with the second computing environment to the proxy service, wherein the first transmission includes data for the first client;

wherein the proxy service is further configured to:

25 store the data received in the first transmission; and

provide to the first client a second advertisement for the stored data to the first client, wherein the second advertisement includes access information for the stored data.

97. The system as recited in claim 87, wherein communication among entities in the second environment uses remote method invocation (RMI).

5 98. The system as recited in claim 97, wherein the second environment is a Jini environment.

99. The system as recited in claim 87, wherein the data representation language is eXtensible Markup Language (XML).

10

100. A carrier medium comprising program instructions, wherein the program instructions are computer-executable to implement:

15

a first entity in the first computing environment accessing a proxy service through messages in a data representation language;

the proxy service providing to the first entity an interface to a second entity in the second computing environment; and

20

the first entity accessing the second entity in the second computing environment through the interface provided by the proxy service.

25

101. The carrier medium as recited in claim 100, wherein the first entity is a client in the first computing environment, wherein the second entity is a service accessible through the second computing environment, and wherein the interface provided by the proxy service enables the first entity to access resources provided by the second entity to clients in the second environment.

102. The carrier medium as recited in claim 101, wherein, in said providing to the first entity the interface to the second entity in the second computing environment, the program instructions are further computer-executable to implement locating the second entity among a plurality of services accessible through the second computing environment.

5

103. The carrier medium as recited in claim 102, wherein, in said locating the second entity among the plurality of services accessible through the second computing environment, the program instructions are further computer-executable to implement determining that the second entity includes information identifying the entity as a service accessible by entities in the first environment through proxy service interfaces to the second computing environment.

10

15 104. The carrier medium as recited in 101, wherein, in providing to the first entity an interface to a second entity in the second computing environment, the program instructions are further computer-executable to implement providing an advertisement for the second entity, wherein the advertisement for the second entity includes access information for accessing the second entity in the second environment from the first environment.

20

105. The carrier medium as recited in claim 104,

25

wherein the program instructions are further computer-executable to implement publishing the advertisement for the second entity on a space in the first computing environment; and

wherein, in accessing a second entity in the second computing environment through an interface, the program instructions are further computer-executable to implement:

30

the first entity accessing the advertisement for the second entity from one or more advertisements published on the space; and

the first entity accessing the second entity in accordance with the access information in the advertisement for the second entity.

106. The carrier medium as recited in claim 104,

wherein the advertisement includes information describing one or more computer programming language method calls to methods in the computer programming language provided by the second entity;

wherein the program instructions are further computer-executable to implement constructing on the first entity a client method gate configured to provide an interface to the second entity by generating data representation language messages including information representing the method calls.

107. The carrier medium as recited in claim 106, wherein, in the first entity accessing the second entity, the program instructions are further computer-executable to implement:

the first entity generating a method call in the computer programming language;

the client method gate generating a data representation language message including information representing the method call;

the client method gate sending the data representation language message to a proxy method gate comprised on the proxy service;

the proxy method gate generating one or more objects in the computer programming language from the information representing the method call;

5 10 15 20 25

the proxy service invoking a method on the second entity, wherein the one or more objects are passed to the method in said invoking;

5 the second entity executing the invoked method, wherein said executing generates results data; and

the second entity sending the results data to the proxy service.

10 108. The carrier medium as recited in claim 107, wherein the program instructions are further computer-executable to implement:

the proxy service generating a results advertisement for the results data;

15 the proxy service sending the results advertisement to the client method gate; and

the first entity generating a results method gate from the results advertisement sent to the client method gate.

20 109. The carrier medium as recited in claim 107, wherein the computer programming language is Java.

110. The carrier medium as recited in claim 100, the program instructions are further computer-executable to implement:

25

the first entity sending a first message in the data representation language to the proxy service, wherein the first message includes information for the second entity;

converting the first message in the data representation language to a first transmission compatible with the second computing environment and receivable by the second entity in the second computing environment; and

5 sending the first transmission to the second entity in the second computing environment.

111. The carrier medium as recited in claim 100, the program instructions are further computer-executable to implement:

10 the second entity sending a first transmission compatible with the second computing environment to the proxy service, wherein the first transmission includes information for the first entity;

15 converting the first transmission to a first message in the data representation language, wherein the first message includes the information from the first transmission; and

20 sending the first message to the first entity in the first computing environment;

wherein the information in the first transmission is results data generated by the second entity in response to a request sent to the second entity by the first entity through the proxy service.

25 112. The carrier medium as recited in claim 100, wherein the program instructions are further computer-executable to implement:

30 the second entity sending a first transmission compatible with the second computing environment to the proxy service, wherein the first transmission includes data for the first entity;

storing the data received in the first transmission; and

5 providing an advertisement for the stored data to the first entity, wherein the
advertisement for the stored data includes access information for the stored
data;

10 wherein the data in the first transmission is results data generated by the second
entity in response to a request sent to the second entity by the first entity
through the proxy service.

113. The carrier medium as recited in claim 100, wherein the second environment is a
non-message based environment.
- 15 114. The carrier medium as recited in claim 100, wherein communication among
entities in the second environment uses remote method invocation (RMI).
115. The carrier medium as recited in claim 114, wherein the second environment is a
Jini environment.
- 20 116. The carrier medium as recited in claim 100, wherein the second environment is an
enterprise computing environment, wherein the second entity is an enterprise service
accessible through the enterprise computing environment.
- 25 117. The carrier medium as recited in claim 100, wherein the data representation
language is eXtensible Markup Language (XML).

30 118. A carrier medium comprising program instructions, wherein the program
instructions are computer-executable to implement:

a first entity in the second computing environment accessing a proxy service;

the proxy service providing to the first entity an interface to a second entity in the
5 first computing environment; and

the first entity accessing the second entity in the first computing environment
through the interface provided by the proxy service, wherein the proxy
service accesses the second entity through messages in the data
10 representation language.

119. The carrier medium as recited in claim 118, wherein the first entity is a client in
the second computing environment, wherein the second entity is a service accessible
through the first computing environment, and wherein the interface provided by the proxy
15 service enables the first entity to access resources provided by the second entity to clients
in the first computing environment.

120. The carrier medium as recited in claim 119, wherein, in the proxy service
providing to the first entity the interface to the second entity in the first computing
20 environment, the program instructions are further computer-executable to implement
locating the second entity among a plurality of services accessible through the first
computing environment.

121. The carrier medium as recited in claim 118, wherein the program instructions are
25 further computer-executable to implement:

the first entity sending a transmission compatible with the second computing
environment to the interface, wherein the first message includes
information for the second entity;

30

converting the first transmission to a first message in the data representation language of the first environment; and

sending the first message to the second entity in the first computing environment.

5

122. The carrier medium as recited in claim 118, wherein the program instructions are further computer-executable to implement:

10 the second entity sending a first message in the data representation language to the interface, wherein the first message includes information for the first entity;

15 converting the first message to a first transmission compatible with the second computing environment, wherein the first message includes the information from the first message; and

20 sending the first transmission to the ~~first~~ entity in the second computing environment;

wherein the information in the first transmission is results data generated by the second entity in response to a request sent to the second entity by the first entity through the interface.

25 123. The carrier medium as recited in claim 118, wherein the second environment is a non-message based environment.

124. The carrier medium as recited in claim 118, wherein communication among entities in the second environment uses remote method invocation (RMI).

125. The carrier medium as recited in claim 124, wherein the second environment is a Jini environment.

126. The carrier medium as recited in claim 118, wherein the data representation language is eXtensible Markup Language (XML).
5

127. A carrier medium comprising program instructions, wherein the program instructions are computer-executable to implement:
10

locating one or more services among a plurality of services accessible through a second computing environment;

15 generating one or more advertisements in the data representation language for the one or more services in the second computing environment, wherein an advertisement for a service includes access information for accessing the service in the second environment from the first environment; and

20 publishing the one or more advertisements in a space in the first computing environment.


128. The carrier medium as recited in claim 127, wherein, in said locating one or more services among a plurality of services in the second computing environment, the program instructions are further computer-executable to implement determining that each of the one or more services includes information identifying the service as accessible by clients in the first environment through proxy service interfaces to the second computing environment.
25

129. The carrier medium as recited in claim 127, wherein the program instructions are 30 further computer-executable to implement:

5

a first client in the first computing environment accessing, from the one or more advertisements published on the space, a first advertisement associated with a first service of the one or more services accessible through the second computing environment;

10

the first client invoking a proxy service for the first service in accordance with the access information in the first advertisement; and

20

130. The carrier medium as recited in claim 129, wherein the program instructions are further computer-executable to implement:

the first client sending a first message in the data representation language to the proxy service, wherein the first message includes information for the first service;

25

converting the first message in the data representation language to a first transmission compatible with the second computing environment and receivable by the first service in the second computing environment; and

30

sending the first transmission to the first service in the second computing environment.

131. The carrier medium as recited in claim 129, wherein the program instructions are further computer-executable to implement:

30

the first service sending a first transmission compatible with the second computing environment to the proxy service, wherein the first transmission includes information for the first client;

5 converting the first transmission to a first message in the data representation language, wherein the first message includes the information from the first transmission; and

sending the first message to the first client in the first computing environment;

10 wherein the information in the first transmission is results data generated by the first service in response to a request sent to the first service by the first client through the proxy service.

15 132. The carrier medium as recited in claim 129, wherein the program instructions are further computer-executable to implement:

20 the first service sending a first transmission compatible with the second computing environment to the proxy service, wherein the first transmission includes data for the first client;

storing the data received in the first transmission; and

25 providing to the first client a second advertisement for the stored data to the first client, wherein the second advertisement includes access information for the stored data.

133. The carrier medium as recited in claim 127, wherein communication among entities in the second environment uses remote method invocation (RMI).

30

134. The carrier medium as recited in claim 133, wherein the second environment is a Jini environment.

135. The carrier medium as recited in claim 127, wherein the data representation language is eXtensible Markup Language (XML).